The Liberty Bell — Independence Hall — Philadelphia, Penna.

33rd National Shade Tree Conference — Philadelphia — Sheraton Hotel — Aug. 26-30

Origin and History of Cultivated Plane-trees

Hui-Lin Li

Trees Of The Bible

R. R. Cunningham

July-August, 1957 *The Journal of American Arboriculture* Vol. 17 No. 5

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TREES MAGAZINE
P. O. BOX 5
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ALONG THE WAY With .... EDW. SCANLON

■ IN PORTLAND there is a FINE STEAK HOUSE, called the OLD COUNTRY KITCHEN. They offer a 72-OZ. STEAK at $9.50 per copy--but—IF YOU CAN PUT IT, and the trimmings, AWAY WITHIN AN HOUR its FOR FREE. In ten years 163 PEOPLE HAVE ATTEMPTED this gastronomic marathon but ONLY 33 HAVE SUCCEEDED. I started practising on a 12 OUNCER and from the CONTENTED FEELING derived it would seem the REMAINING 60 OZS. will never be bridged.

■ **Got a REAL NICE BREAK on the weather while on the coast (June 9-19). The DAY AFTER I left Los Angeles it hit 104°. It had RAINED FOR A WEEK in Portland, when I arrived IT STOPPED and sunned up. All this time you POOR EASTERNERS were wallowing in 90 or better. NICE TIMING, but probably MOSTLY LUCK.**

■ Took some NICE PICTURES for the "TREE USE SERIES" which WILL START in TREES, probably in the DECEMBER OR FEBRUARY ISSUE. In this series we hope TO OUTLINE THE VARIOUS TREES enumerated in the "Recommended Tree List" (TREES-Vol. 15-No. 3) of the SHADE TREE SELECTION COMMITTEE (N.S.T.C.) —the outline will give A BACKGROUND AND DESCRIPTION OF EACH TREE with RECOMMENDATIONS FOR ITS MOST FUNCTIONAL USES.

■ **After a SUFFICIENT NUMBER of trees have been discussed in the TREE USE SERIES we hope TO PUBLISH them IN BOOK FORM—along the line of the FINE PRESENTATION OF FOREST TREES in "KNOWING YOUR TREES."**

■ SOMEWHERE in the FINE EARTH OF THE RANCHO there reposes one of MY CHOICE BARLING PIPES—a nice saddle-bit Canadian—LOST IT on Easter Sunday while in the process of PLANTING A PEPPERMINT STICK PEACH on the lawn. LOOKED AND LOOKED in vain—EVEN WENT SO FAR as TO DIG UP THE PEACH to see if it had FALLEN IN THE HOLE—no pipe.

■ **The NEW CITY FORESTER at GRAND FORKS, N. D. is WAYNE WILLMENG. WAYNE has been SUPT. OF PARKS at BENTON HARBOR, MICH. Good luck WAYNE—we understand G. F. is a REAL NOW TOWN and it should be a GOOD OPPORTUNITY to do some REAL STREET TREE WORK.**

■ ED ELWOOD OF BRITT, IOWA must have a nice tree service outfit there. He WRITES TO TELL us that he LIKES TREES SO MUCH he has it SENT TO FLORIDA to keep him company on THOSE COLD WINTER NIGHTS there.

■ **A NOTE WITH A PIC clipped from the CHICAGO TRIBUNE by our FAITHFUL CORRESPONDENT X2 (HAROLD WAGNER, AKRON MET PKS). The caption describes the log as a EUCALYPTUS, which it UNQUESTIONABLY APPEARS to be (probably Globulus)—says it weighs 25,600 lbs., 7½ ft. in dia.—is to be TURNED INTO VENEER for furniture (wait 'till they see the CRAZY CHECKS that develop) and HERES THE PAYOFF—it came from a Euc. in Eureka, Cal. that was MORE THAN 600 YEARS OLD—Here's some NEWS FOR THE VENEER LADS, the EUCALYPTUS WAS INTRODUCED INTO CALIFORNIA AROUND 1850, so if this baby is 600 yrs. old the SEED MUST HAVE BEEN DROPPED there by an AUSTRALIAN CUCKOO BIRD that was OFF COURSE.**

■ ED MENNINGER wants me to come DOWN TO FLORIDA and LOOK AT SOME TREES next winter—thanks ED I'll do that little thing if I HAVE ANY CABBAGE LEFT when I GET BACK from Europe—you know HOW THEY GLOM onto those BUCKS—also, if I CAN GET the COMPANY TREASURER on an AIRPLANE.

■ **Congrats to RAY ALLEN OF KINGSWOOD GARDENS for his election, recently at PORTLAND, as PRESIDENT OF THE MENS GARDEN CLUBS OF AMERICA. I just missed that meeting in Portland by ABOUT TWO DAYS RAY or you would have had ANOTHER VOTE.**

■ PAUL TILFORD is now the "MAN OF THE MONTH" in his town of WOOSTER, OHIO. This honor is conferred on DESERVING WOOSTERIANS each month by the WAYNE COUNTY NATIONAL BANK. His picture is displayed in the WINDOW OF THE BANK on the main street. CONGRATS DOC—but LETS HOPE it doesn't START A RUN on the BANK.

■ **A POSTCARD FROM ITALY from BOB EVERLY was very welcome. BOB WAS A DELEGATE to the FIRST INTERNATIONAL PARK CONGRESS held in London in May. Hope you LEFT EVERYTHING peaceful over there BOBBY so I won't GET RACKED UP on my visit IN SEPTEMBER.**

■ The OCTAGON HANDLED pole saw BARNEY BARTLETT listed in HIS AD in the May-June issue is NOT AN OCTAGON, it is A RECTAGON—that's a NEW WORD that is short for rectangular. Lexicographers make note.

■ **YOU WON'T BELIEVE IT, but the SEQUOIA GIGANTEA at the RANCHO has made 30 INCHES, honest injun, OF GROWTH this Spring and Summer. An UPRIGHT GOLDENRAIN has put on 36 INCHES. It has RAINED AND RAINED.**

■ If ANY OF YOU LADS have ANYTHING FOR PUBLICATION in the SEPTEMBER-OCTOBER ISSUE please get it to me before the FIRST DAY OF THE MONTH. I HAVE TO LEAVE on the 15th for the EUROPEAN JAUNT —advertisers have been asked to observe this NEW TEMPORARY DEADLINE also—September 1st. TANKS.

■ **SAN FRANCISCO is an INTERESTING, EXOTIC and a FASCINATING CITY—certainly the MOST UNIQUE in AMERCIA—and anyone CAN FALL IN LOVE with it—but, MOST WRITERS refer to it AS "BEAUTIFUL"; it is ANYTHING BUT BEAUTIFUL in my opinion. It has FEW TREES, (except magnificent Golden Gate Park) and the few there are, ARE INFERIOR BEAT UP SPECIES. What a job THEY COULD DO tho with GLOBES, UPRIGHTS AND SMALL FLOWERING THINGS on those hills and dales—it COULD BE A MASTERPIECE of STREET TREE USE if they would TURN LOOSE SOME IMAGINATION.**

■ You know THIS AIRPLANE STUFF STILL AMAZES ME; frinstance, on Sept. 15 I HAVE BREAKFAST AT THE OLD RANCHO and the NEXT MORNING I'm CHEWING UP LIVERWURST somewhere around the beautiful KILLARNEY LAKES IN IRELAND. I get into Shannon Airport at 4:30 a. m., hope there is SOMEONE AWAKE to start the bus that will take me around the SOUTHERN TIP OF IRELAND to KILLARNEY LAKES, CORK, BLARNEY CASTLE, then to DUBLIN. From there to LONDON for a day to buy SOME PIPES, OLD BOOKS, and maybe more tweeds.

■ **LOUIE THE CHADWICK and JIM CALDWELL, EXTENSION FLORICULTURIST from Columbus stopped by the RANCHO last week and PARTOOK OF A SCANLON super duper steako. They MISSED THE BALL GAME but the YANKS POUNDED THE INDIANS so they came out AHEAD.**

■ STOPPED AT the SHERATON HOTEL in Philly several weeks ago—YOU'LL LIKE IT when you attend the SHADE TREE CONFERENCE—don't forget to eat in the CHEDDAR CHEESE ROOM, or whatever they call it—PLENTY OF ATMOSPHERE and real GOOD CHOW. HOPE I CAN MAKE it but that BIG TRIP TO YURRUP is piling things up.

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The Editors of TREES invite discussions, comments and all type of literary materials pertaining to trees and tree preservation from any person engaged either in the scientific advancement or commercial development of the field.

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July-August, 1957 **Journal of the National Arborist Association** Vol. 17 No. 5

EDWARD H. SCANLON, Editor
7621 Lewis Rd., Olmsted Falls, Ohio ADams 5-2357

"No place is complete without trees. A home without trees is charmless; a road without trees is shadeless; a park without trees is purposeless; A COUNTRY WITHOUT TREES IS HOPELESS."

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Out On A Limb

MORE FACTS ON STREET TREE PLANTING

Whilst the cultivation of trees in the streets of large towns and cities undoubtedly presents many difficulties not encountered under the ordinary conditions of parks and gardens, it cannot be said generally that the authorities who have control over these matters have risen to the level of their opportunities. An enormous number of new varieties and species of hardy trees have been added to our collections during *the last fifty years,* yet it is very rarely indeed that one sees any attempt made to go outside a certain restricted group of common trees for the adornment of streets. The only consideration appears to be "Will it grow?" That, of course, must always remain the most important consideration, *but it need not be the only one.*

The three commonest trees planted in towns in the South of England are plane *(Platanus acerifolia),* horse-chestnut *(Aesculus hippocastanum)* and common lime. *(Tilia vulgaris),* not one of which can be regarded as a perfect tree for ordinary streets.

For many parts of London the *plane* has proved to be the greatest boon to the street planter. It thrives in Central London and in city yards as no other tree has yet been found to do, and for such places it would be absurd to decry its use. But in the outer suburbs, where the atmosphere is better, *and the streets often narrow,* the *plane* is not a suitable tree. Naturally one of the noblest in its proportions of all deciduous trees, and one of the largest, it is very much out of place occupying two sides of a street, the whole width of which would not half accommodate a fully grown tree. Yet even in the outer suburbs of London, in districts as yet only half built over, and where many streets still have orchards and gardens at their sides, *the imagination of local authorities often fails to rise beyond the plane.*

With respect to the *horse-chestnut* the same objections as to size obtain. The tree does not bear pruning so well as the plane, owing to the soft nature of its wood, which enables fungoid parasites to find an easy entry at the wounds, unless great care is taken. On the other hand, the foliage is perhaps the handsomest of all trees commonly grown in streets, and, if not pruned too recklessly, the tree gives more or less blossom. I offer a few substitutes for the common horse-chesnut farther on.

Of the third popular subject—the *lime*—it is difficult to say anything in favour except its good nature under adverse circumstances. But it is very apt to decay in the trunk where branches have been removed, and its leaves are about the earliest to fall of those of all hard trees. Often towards the end of July, if the summer be dry, they commence to turn rusty on the tree and soon after to litter the pavement. The English summer is not long enough for it to be good that suggestions of autumn should be thrust on one so soon. A still worse defect of the *lime* is its liability to be infested with aphides. In my own district I have seen the pavements black with their excrement, not to speak of the covering of filth on garden walls and shrubberies near.

There is perhaps no more unthankful task than the prun-

ing of such trees as these in town streets. The pruner is the butt of every retired citizen who, taking his walks abroad, sees what he considers the wanton mutilation of ratepayer's property going on. He usually relieves his feelings by writing to the local paper. Yet, with a considerable experience of tree pruning, I am not able to see how the present system is to be improved upon, *so long as two rows of naturally big trees are crowded in one narrow street.* It is all very well to cry out about "mutilation" and "barbarous treatment," and so on —and certainly the winter aspect of many street trees as left by the pruner is suggestive of nightmare—but the real problem involved is the restriction of a tree year after year to dimensions a mere fraction of what it should naturally attain, and yet preserve its natural beauty. *And of that problem I have never yet seen offered a satisfactory solution.* Some people put off the evil day until the trees overgrow and overshade their area, then the inevitable lopping has results more hideous than ever.

Therefore, *the first great principle in street planting is the selection of suitable trees.* If one takes the average provincial city or town, the conditions are not generally bad. I am not referring to the centre of such cities as London, Glasgow, Manchester, or Liverpool, or to the swarm of large towns in Lancashire, Yorkshire, etc., whose belching chimneys blacken the earth and everything upon it. In such places street planting presents special problems, and the choice of tree is very much narrowed. But after all the air of most towns in the British Isles is pure enough to involve little disadvantage to deciduous vegetation, and in limiting themselves to their present restricted choice, I believe that local authorities have denied themselves a very important method of beautifying their towns and brightening the lives of those who live in them.

The planting of streets has become stereotyped not only in the material but in the system. The chief difficulties are due to the narrowness of our streets. If Parliament should ever concern itself effectually with town-planting, the streets of the future will no doubt be wider, and some provision either at the side or in the middle should be made for tree-planting. That would make the task of the street planter easier in many ways. The planting of streets down the centre can, of course, only be carried out in the broad arterial thoroughfares of great cities. A famous example of this style is the Unter den Linden in Berlin. Here the *limes* are planted in an avenue up the centre of the roadway, and beneath them pedestrians may stroll, the wheeled traffic passing along the sides. I recently saw a very interesting piece of street planting in Rochester in the State of New York. The centre of the street is planted with magnolias of the *Yulan* and *Soulangeana* types. These are now fine trees, and their flowering in spring is one of the notable annual events of the city. But for such effects as these the first essential, of course, is sufficient width—a greater width probably than will ever be accorded to all but the arteries of great cities. Most streets will always have to be planted at the sides.

My contention is that *the trees now generally planted in streets are naturally too big,* and that their restriction to the needful limits involves—and inevitably involves—a system of pruning which makes them eyesores rather than objects of beauty through the long months they are without foliage. Yet, as every forest lover knows, the leafless tree has a charm, more subtle perhaps, but in its season as satisfying as that of the lush growth of June. The *plane* and *Horse-chestnut* are admirable where they have room, as in town squares to assume something like their normal dimensions, and the former will probably always be the chief stand-by for the planter in the central depths of large cities.

—By W. J. Bean, late Curator, Royal Botanic Gardens, Kew. (Excerpts from the Chapter on "Street Planting" in his monumental work, "Trees and Shrubs Hardy In The British Isles," published in 1914.)

Two Kibitzers

We have Jack Kenealy's word for it that he is not the guy at the handle end of the chain saw. Jack is the one with the smallest ears. His companion is Gina from the Philadelphia Zoo. You can see this charmer if you attend the 33rd National Shade Tree Conference in Philadelphia Aug. 26-30. Jack is General Chairman for the Conference.

Tree Fire Blight Seen Curbed By Antibiotics

It's too late to give them their antibiotic "medicine," but ornamental fruit trees and rose family plants suffering from the singed-look of fire blight can still be ministered to in other ways.

Scorched foliage and blackened twigs are symptoms of bacterial invasion, spread by otherwise helpful bees. Apple, pear and peach trees, popular for home grounds landscaping are frequent victims.

Up until now, preventive sprays have been ineffective. Today, sprays using almost infinitesimal and inexpensive amounts of streptomycin appear to offer good control, according to F. R. Lancaster, plant pathologist and technical adviser of the Davey Tree Expert Co.

Such medicinal sprays are effective only when applied while trees or plants are in flower. Three to four applications seem to act as a bacterial check. Once fire blight has spread, however, pruning is the remedial measure. Reason is the disease moves back from the blossoms into branches or twigs.

Cutback must be from two to three feet beyond the last visible evidence and into what appears to be sound, healthy tree tissue. Pruning of this nature usually is accomplished over a period of two to three years.

Because of the ease with which the disease spreads, pruning tools must be stirilized after every cut. The home owner who does his own surgery can swish his tools vigorously in a lysol solution.

Norms Dogwood

Norm Armstrong, the sage of Chapel Hill, N. C., sent us this picture of a Dogwood that he claims is the finest he has ever seen. We would have to go along with the claim altho this boy can really make some wild ones. Norm has promised to get us a picture of the tree in flower next spring. Wouldn't a street of babies like this make a town famous? Yeah! But why don't you see more of them? Read the Editorial up above and you will get a few ideas of why not.

PROGRAM 33rd NATIONAL SHADE TREE CONFERENCE

The brand new Sheraton Hotel will be the headquarters for the 33rd annual National Shade Tree Conference which is all set to convene on Monday morning, Aug. 26th.

An especially educational series of excellent papers has been scheduled for the ultra modern assembly rooms in the all air-conditioned Sheraton—and if you think air-conditioning isn't something nice wait till you stick your head out of the door.

The field demonstrations, always the highlight of the Conference will be held Wednesday starting with a barbecue at Fairway Farms with Carl Asplundh as host—and you know what that can lead to. A visit will be paid to the Asplundh warehouse and if you want to dunk the body the swimming pool of the Philmont Country Club will be full of tepid water and the bar full of cold beer.

A slight change in procedure will be noted in that the National Arborists Association and Municipal Arborists meetings are scheduled for Monday afternoon, with a get-together and entertainment set for the evening.

Jack Kenealy, the General Chairman, wanted us to call your attention to a tour on Friday morning to the famed Longwood Gardens. This is the world famed estate of the DuPonts and is a magnificent spectacle. You will see many spectacular tropical plants in the large glasshouses and the trees around the grounds are different and attractive. Outstanding are the box plants and the water garden.

Don't forget to register for the biggest door prize ever offered at a National Shade Tree Conference—an Asplundh Chipper.

The Conference will close as usual with the banquet on Thursday evening. An interesting event on the program will be the luncheon address given on Tuesday noon by Mr. Jack Kelly, father of Princess Grace, and Vice President of the Fairmount Park Commission. Summing up it looks like another very worth while Conference.

The program follows:

Monday, August 26

Registration
Visit the Commercial Exhibits
Official Opening
10:00 A.M.—Welcome to Philadelphia —Mr. Noble, Director of Fairmount Park.

The Water and Box Garden at the famed Du Pont Estate, Longwood

"How a Tree Grows"—Dr. W. H. Camp, University of Connecticut, Storrs, Conn.
"The Importance of Research in Arboriculture"—Dr. Philip L. Rusden, Bartlett Tree Research Lab., Stamford, Conn.
Split Sessions
2:00 P.M.—National Arborists Association Meeting:
"Drop Crotch Trimming vs. Shear Trimming for Line Clearance" — Frank E. Graham, Supt., Alabama Power Co., Birmingham, Ala.
"Disposal of Wood from Trimming and Tree Removal"—Panel Discussion
2:00 P.M.—Municipal Arborists, Shade Tree Commissioners and City Foresters Session
Frank E. Karpick, Bureau of Forestry, Buffalo, N. Y.—Moderator
"A Planned Program for Dutch Elm Disease Control"—J. A. Dietrich, Park Supt., Greenwich, Conn.
"Propagation of Some Little Used Shade and Street Trees"—Roger Coggeshall, Propagator, Arnold Arboretum, Jamaica Plain, Mass.
"Department Crews vs. Contract Crews for Municipal Shade Tree Operations" — Panel Discussion, T. J. Haskell, Lansing, Michigan —Leader. Panel members: Harry Turner, Thos. Greeley, Hyland Johns.
8:15 P.M.—Hospitality Party

Tuesday, August 27

9:45 A.M. — "Effect of Container-Growing on Tree Roots" — Dr. Ray R. Hirt, State College of New York, Syracuse, N. Y.
"Selection and Propagation of Functional Shade and Street Trees" — Maunsell Van Rensselaer, Dir., Saratoga Horticultural Foundation, Saratoga, California.
"Tree Borers and Effective Control Methods"—Dr. Donald Schuder, Purdue Univ., Lafayette, Indiana.
12:00 Noon—Keynote Luncheon
Address by Mr. John Kelly, Vice President, Fairmount Park Comm.
2:00 P.M.—"Support of Research at State Agricultural Experiment Stations by Federal Grant Appropriations"—Dr. Wm. Kennard and Dr. Wilbur D. McClellan, Office of Exp. Stations, Washington, D.C.
"Attracting Quality Personnel to Arboriculture" — Noel B. Wysong, Cook County Forest Preserve District, River Forest, Ill.
Business Session
"Open Meeting"

(Continued on Page 26)

The Origin and History of the Cultivated Plane-trees

By Hui-Lin Li

Taxonomist
The Morris Arboretum of the University of Pennsylvania

Editor's Note: *We gratefully acknowledge the permission granted by Dr. John M. Fogg, Jr., Director of the Morris Arboretum to publish this splendid paper which appeared in the Morris Arboretum Bulletin. It will run in two parts.*

Introduction

The familiar Plane-tree, the most widely planted street and shade tree in many American and European cities, is curiously, one of the most badly confused plants in horticulture. The three commonly planted species, the Oriental Plane, the American Plane and the London Plane, because of their generally similar and at the same time extremely variable foliage characters, are often wrongly identified, not only in trade catalogues but also in horticulture literature. The confusion is further aggravated by the uncertain origin of the London Plane, which has baffled horticulturists and botanists for many decades.

Fig. 1. Platanus × acerifolia at the Morris Arboretum

The London Plane is unknown in the wild state and apparently originated in cultivation. (Fig. 1). In horticulture lliterature before the early years of the present century, it was generally considered a variety of the Oriental Plane, and because of this, when the Oriental Plane or *Platanus orientalis* is mentioned in the literature, it may be referable either to the true Oriental Plane or to the London Plane, *P.* × *acerifolia.* The prevalent consensus is that the latter is most probably a hybrid between the Oriental Plane and the American Plan, *P. occidentalis,* but the confusion does not abate. (Fig. 2).

Some of the confusion is probably due also to the many common and colloquial names applied to these trees; these names will be discussed below. For the present discussions, the common names used for the three species in question will be Oriental Plane for *P. orientalis,* American Plane for *P. occidentalis* and London Plane for *P.* × *acerifolia.* (Figs. 3, 4 and 5).

Fig 2. Leaves of Platanus occidentalis (left) P × acerifolia (middle), and P. orientalis (right)

Fig. 3. Platanus orientalis, from planted tree, Morris Arboretum

Fig. 4. Platanus occidentalis, from planted tree, Morris Arboretum

The Oriental Plane is one of the oldest and most cherished shade trees cultivated by men, and is still widely planted in many parts of the world. The American Plane came into cultivation during the 16th century, while the London Plane originated as a cultivated tree about the later part of the 17th century. These three plants are among the most prominent features of the landscapes in many habitats of man's choice, from cities made of modern skyscrapers in America and Europe to towns made of mud huts among the steppes of western and central Asia. The story of the Plane-trees indeed is most instructive in illustrating the mutual influences exerted by man and the surrounding vegetation on each other.

To trace the history of cultivation of the different Plane-trees, especially the mysterious and elusive origin of the London Plane, it is necessary first to take into account the genus *Platanus,* which, aside from the fact that it contains some of the most attractive and valuable

shade trees, is a genus that will repay consideration.

THE GENUS PLATANUS

The genus *Platanus* is the only member of the family Platanaceae, a family of special interest because of its isolated position and disputed relationships in the phylogeny of the flowering plants. The 8 or 9 species of *Platanus* are scattered in widely disjunct areas in the Northern Temperate Zone, a pattern of distribution which generally indicates antiquity. Actually the family history of *Platanus* is one of the most majestic, for paleobotanists trace its ancestry back to the age of Dinosaurs in the late Cretaceous, some 100 million years ago.

The species of the genus *Platanus* more or less closely resemble each other in general appearance. They are tall deciduous trees with smooth bark shedding in broad, brittle thin plates and exposing the whitish or brownish inner bark. The leaves are large, palmately lobed with toothed or smooth margins and with the leaf-stalks enlarged at base enclosing the winter buds. There are stipules usually sheathing the base of the leaf-stalks, of varying sizes and often falling off very early. The flowers of distinct sexes produced on separate inflorescences on the same tree. They are very minute and simple, without perianth and closely packed in hanging globose heads. The fruiting heads remain attached to the tree during the winter on the otherwise bare branches, presenting a graceful appearance. These heads break up in late winter and the hairy fruits are widely distributed by winds. The wood of these trees, light brownish or reddish in color, splits poorly and is thus not highly valued.

There is one species in southeastern Europe and western Asia, *P. orientalis*, the Oriental Plane. In eastern North America, the American Plane, *P. occidentalis*, occupies a wide range from southern Maine to Ontario and Nebraska south to northern Florida and Texas. The variety *glabrata* occurs from central Iowa and Missouri to western Texas and northern Mexico.

Fig. 5. Platanus × acerifolia, from planted tree, Verree Road

Fig. 6. Platanus Kerri

In western North America *P. racemosa* occurs in southern California and Lower California, and *P. Wrightii* from New Mexico and Arizona to California and northern Mexico, sometimes planted in the latter region as a shade tree. Also known from Mexico are *P. mexicana* (also occasionally planted as a shade tree), and *P. lindeniana*. In addition, Standley proposes two species from Mexico, *P. chiapensis* and *P. oaxacana*. Thus seven species are recorded as occurring in Mexico, but some of them are local or only little known (Standley 1922). Inasmuch as the species are generally differentiated by leaf shapes, and as these are extremely variable even on the same tree, it seems likely that as a result of critical monographic studies, fewer species will be recognized.

Paleobotanists have found that in the Tertiary many species of the genus were widespread through the northern part of the Northern Hemisphere, in all of Europe, northern Asia and North America north to the Arctic Circle (Seward 1931). Subsequently the Pleistocene glaciation exterminated the more northern populations and surviving species are now confined to the eastern Mediterranean region in the Old World and to eastern and western North America including Mexico. Inasmuch as a large number of such Tertiary survivals are now found existing mostly in eastern North America and in China and Japan, the entire absence of *Platanus* from eastern Asia seemed to be very remarkable (Berry 1923).

However, in 1939, the French botanists Gagnepain (1939) made an interesting discovery a plant was found in Loas, Indo-China, which had all the peculiar features of *Plantanus* in the flowering structures but with un-lobed, entire-margined, and pinnate-veined ovate-lanceolate leaves. In spite of the striking difference in the vegetative structures, Gagnepain considered the plant as belonging properly to the genus *Platanus* and *named it P. Kerri.* (Fig. 6).

The Indo-Chinese species has a longer inflorescence than all the other species, with 9 to 11 heads in the fruiting clusters. In the other species, the fruiting heads vary from solitary as in the American *P. occidentalis* to 2 to 6 as in the Oriental *P. orientalis* and others. The larger number is considered a more primitive character and in this sense the Indo-Chinese species probably represents the most primitve species of the genus in existence.

If this proves to be the case, as detailed studies of various other aspects of the plant will verify, the un-lobed entire-margined leaf may indicate a more basic type than the palmately lobed ones, long considered as distinctly characteristic of the genus. This discovery may thus prove of profound significance in the study of the fossil history of the flowering plants, as the genus *Platanus* has long been recognized as one of the most important and abundant of the earlier fossils of the flowering plants. Actually since fossil plants are usually identified by the shape and venation of detached leaves only, such identifications, as is well known among paleobotanists themselves are frequently not quite reliable. The leaves of this Indo-Chinese species, if discovered in rock strata as fossil imprints, will never be recognized as belonging or even related to *Platanus*. This species which apparently has not yet been noted by many paleobotanists, indicates that a revision in our interpretation of fossils pertaining to *Platanus* is to be expected.

THE ORIENTAL PLANE

As noted above, the Oriental Plane occurs in southeastern Europe and western Asia, eastward to Kashmir, but the range has apparently been extended through long years of cultivation. Henry (1908) believes that it occurs wild in Albania, Greece, Cyprus, Crete, Rhodes, and Asia Minor, while the occcurrence in the wild state elsewhere, such as Iran, Afghanistan, Kashmir, etc., is very doubtful. The wild form he considers to differ slightly from the cultivated form in the slightly smaller leaves with cuneate instead of truncate or cordate

leafbase, but as the range of variation in the shape of the leaves in both the wild and cultivated form is considerable, it is not easy to distinguish the two morphologically. The trees cultivated in England or elsewhere are derived from trees indigenous to Greece and Asia Minor. The leaves of the trees cultivated in Kashmir and Iran are much larger, with broad oblong-triangular segments, and according to Henry, perhaps represent a distinct race.

Since very ancient times, the Oriental Plane has been valued as an ornamental shade tree. Its shelter-giving qualities, the wide-spreading branches and large dense foliage, render it one of the most prized trees in the hot lands of the Near East. With its massive size and great age, it is one of the noblest of all trees and many romantic legends are attached to it.

The Plane-tree was known in the earliest records of Greece. Herodotus tells that Xerxes, when he invaded Greece, was so enchanted with a beautiful Plane-tree that he encircled it with a collar of gold and confided the charge of it to one of his Ten Thousand AElians adds that Xerxes passed an entire day under its shade, compelling his whole army to encamp nearby and that

Fig. 7. Platanus orientalis (?) from planted tree, Verree Road

this delay was one of the causes of his defeat. He was so fond of this tree that he covered it with gold and gems, styled it "his mistress, his minion, his goddess", and for several days was entirely oblivious to his expedition and army (Loudon 1844).

In the time of Pliny, Plane-trees were planted near all the public schools in Athens. Pliny says that there is "no tree whatsoever which so well defends us from the heat of the sun in summer." We are told that the grooves of Epicurus, in which Aristotle taught his roving disciples, the groves of Academus, in which Plato delivered his celebrated discourses, and the shady walks planted near the Gymnasia and other public buildings of Athens, were all composed of this tree. Homer frequently mentions "the shady Plane." Socrates swore by the Plane-tree, and this was one of the things that offended Melitus, who thought it a great crime to swear by so beautiful a tree. (Loudon 1844).

The Plane-tree was also cultivated in Iran from the earliest period, and is still one of the most conspicuous features of its landscape. The Romans were long attracted to this precious and beautiful tree of the Levant. We are told how Licinius Mucianus, when Roman Consul in Lycia, dined in its hollow trunk along with eighteen persons of his retinue. It was introduced into Italy from Greece about 390 B.C. and the Romans planted it extensively in their gardens for shade.

The Oriental Plane seems to have been introduced into England as an ornamental tree about the middle of the 16th century, the exact date being unknown. It was introduced into France from England in about 1754 and into North America apparently in colonial times, although the exact date can not be ascertained.

However, at the present, aside from the Mediterranean region, the Oriental Plane is little planted because of its tenderness. It is now uncommon in Great Britain, where it was replaced by the London Plane more than 150 years ago. However, there are scattered fine old specimens of large size of this species planted some 300 years ago in England (Elwes & Henry 1908).

THE ORIENTAL PLANE IN NORTH AMERICA

There seems to be no record extant fixing the date of introduction of the Oriental Plane into North America. Although the Oriental Plane sometimes figures deceptively as an important tree of frequent occurrence in this country actually it is at present extremely rare in cultivation. What is generally called *"Platanus orientalis"* or "Oriental Plane" in the trade and in the literature nearly always proves to be the London Plane, *P* × *acerifolia*. The Oriental Plane is indeed one of the most confused plants in horticulture.

This confusion seems to stem from the early concept of considering the London Plane as a variety of the Oriental Plane. Many authors in the past called the London Plane, simply *"P orientalis,"* without indicating that actually it was meant for *"P orientalis* var. *acerifolia."* Though as early as 1908. Henry pointed out clearly that the London Plane, widely planted in the United States, was invariably known by the erroneous name of *"P. orientalis,"* such a confusion in the names persists to this day in the literature. In 1916 Rehder (in Bailey 1916) noted that "The true oriental plane is rare in cult., the tree usually planted under this name being *P. acerifolia.*" Henry also stated in 1919 that the Oriental Plane, which is not readily propagated by cutings, was never used for planting in streets in Europe or North America, and that it was very rare in the latter region.

In a recent work, Wyman (1951)[1] recommends both *P. orientalis* and *P.* × *acerifolia* as trees for American gardens and states that both are planted annually as a street tree by the thousands and that both these species have been grown as clipped screens and arbors in this country. Despite inquiries from various sources, we have not been able to confirm these uses of *P. orientalis* in this country.

As a result of these inquiries and from a study of herbarium materials and the literature, we have come to note only a few alleged trees of *P. orientalis* in this country. In New York City, Croizat (1937) located four trees, two standing in Central Park, one planted in Morningside Park, and one cultivated

Fig. 8. Platanus orientalis (?), from planted tree, Paper Mill Road

in the Brooklyn Botanic Garden. He says that all of these are mature plants probably of the same age and same origin, although he gives no indication of either. An accompanying illustration and several preserved herbarium specimens show that these trees are probably correctly identified, although they may

[1] In Wyman's book, there is mention of trees of *P. orientalis* in New England said to be three or four hundred years old. Upon inquiry, Dr. Wyman admits this to be an error, stating that he meant England instead of New England.

(Continued on Page 20)

TREES OF THE BIBLE

By R. R. CUNNINGHAM
Arborist,
Dallas, Texas

The world's most important book — that governs our life and conduct—specifically and uniquely covers all professions, laws, manufacturing, agriculture, etc., and sets out suggestions for improvements in all these undertakings. In the Bible more references are made to laws and advice concerning agriculture than any other occupation of man. Arboriculture or the science of trees and their care, is prominently mentioned. Pruning, transplanting, and environmental factors are clearly defined as well as selection, planting, cultivation, and care. Insects and diseases are defined and the results chronicled. Especially the grasshopper or locusts were frequently mentioned since they were the leading plague of Biblical times and countries.

In reviewing in a limited way the Biblical history of trees the arborist might truly and proudly trace his profession to the beginning of time or "Creation and Creator." Trees were our first temples of worship.

In this brief resume on trees of the Bible, I am naturally taking the literal, physical meaning only with no effort or intention of any other interpretation—numerous as they are—on trees in any given passage. Neither do I attempt to give complete references since this would be an endless task.

We have Biblical authority on the fact that gardens and trees were created prior to the creation of man. Genesis 2:8-9: "And the Lord God planted a garden eastward in Eden; and there he put the man who he had formed. And out of the ground made the Lord God to grow every tree that is pleasant to the sight, and good for food; the tree of life also in the midst of the garden, and the tree of knowledge of good and evil."

In many instances trees in the scriptures are referred to metaphorically, but the majority of tree references take on a more practical hue since their uses then were similar to their uses now, and mankind was just as dependent upon them for sustenance, development and progress. From various historical accounts taken from the different books of the Bible, the following trees might be accorded first in importance.

Known as the temptation to Eve and offered by Eve to Adam, causing their expulsion from the garden of Eden, and generally referred to as being the forbidden fruit of the tree of knowledge of good and evil, is the unfortunate role assigned to the apple. We will leave this role unmolested. Solomon says: "I sat down under it's shadow and the fruit was sweet to taste." He loved it as one of his sons.

The fig, mentioned more than 60 times in the scriptures, being the first named plant in the Bible, evidently the leaves of which were Eve's original dress. The fig was the Roman God of Agriculture. The leaves of the fig were used for the crown of Saturn. "To sit under one's own vine and one's own fig tree" became a proverbial expression among the Jews to denote peace and prosperity. I Kings 4:25; Micah 4:4; Zech 2:10. The first tree care is mentioned in Luke with reference to the fig. "A certain man had a fig tree planted in his orchard." He came and sought fruit thereon and found none. After three years he advised his gardener, since finding no fruit, to "Dung" or fertilize and cultivate it and if it does not bear fruit, cut it down. Mount Olivet was famous for its fig trees in ancient times, and they are still found there. The fig was put to many uses, fig poultices and syrup of figs are mentioned in Kings and Chronicles, especially in use for relief of the boils of King Hezekiah. And, of course, figs were a common source of food. Jesus mentioned how near is spring when the fig puts out its leaves. The fig of that climate and country put out fruit prior to putting out its leaves.

The olive tree grew abundantly on the shores of the Mediterranean. Deut. 6:11; 8:8; 28:40. The kings had very extensive olive groves, I Chron. 27:28. The cultivation of the olive tree had the closest connection with the domestic life of the Israelites, 2 Chron. 2:10, and had prominence in religious worship and ceremonies. In Genesis we read "Abraham planted a grove in Beersheba. In Solonmon's temple the cherubim were made of olive as were the doors and posts. The olive branch brought by the dove in its return to the ark, evidencing to Noah the ending of the flood, is still thought of as a symbol of peace. The Mount of Olives, named for its abundant olive trees, is connected with some of the gravest events of both the Old and New Testament. In the garden of Gethsemane the olive trees are still standing under which Christ prayed, a living link of this occasion. Commercially the tree was most important in furnishing food, oil for lights and lubricants, and many other uses. It is said that half of the people would have had to move from the holy land in Biblical times should these trees have been destroyed.

The palm tree, beautiful as well as useful furnished food, and its leaves and timber were used in the manufacture of many articles. It is referred to throughout the scriptures. A beautiful reference in Psalms 92:12 "The righteous shall flourish like the palm tree," and Rev. 7:9, the glorified of all nations referred to as "clothed with white robes and palms in their hands," the palm as well as the olive being used as a symbol of peace. The palm is now rare in Judea, but not extinct since it grows abundantly in other sections.

The cedar, a wide spreading, slow growing, long lived tree, was extensively used and is referred to many times. Its durable qualities, aromatic odor, and many uses made it famous. Generally the cedar of Lebanon is intended in references, 1 Kings 7:2; 10:27; Ps. 92:12; Song of Solomon, 5:15; Isa. 2:13. Of this celebrated grove on Mount Lebanon, many still remain. Some of the largest are 60 feet in girth and 70 feet high.

The Shittah tree, more often referred to in the plural shittim or shittim wood, is a species of the Acacia of which three or four kinds occur in the Bible lands—locally one being our mimosa. The wood of this tree was extensively employed in the construction of the Tabernacle. The Ark of the Covenant, the first piece of the tabernacle's furniture, was made of this wood, and overlaid within and without with gold. It is a close grained wood and used for cabinet work, and has many references to its use. Its wood was also used to denote burial places of Biblical characters, probably because of its durable lasting qualities.

The oak, symbol of sturdiness of character, grows very large, and reaches an old age. There are a number of varieties. It is best known by its part in the death of Absolem, King David's black sheep son, whose army being defeated by his father's loval warriors was fleeing on a mule, and his long hair caught in the branches of a huge oak and he hung in agonv until killed bv Joab. The ribs and beams of Noah's ark were of oak. The perpetual fires of pagan worship were kept going by oak wood. Tubalcain, the first iron worker surely used charcoal made from oak in his foundries.

The fir, a species of cedar, was used in Solomon's Palace and the Temple. The lumber lends itself well to carving. The doors of the Temple were ornately carved as well as ceilings from fir tim-

bers. It was used also in the making of spears and arrows. This type of tree is also found in the Lebanon. Fir timber was used in ship-building, Ezek. 27:5, and for making musical instruments. I like to think of this tree as referred to in 2 Samuel when David and all the house of Israel played before the Lord on all manner of instruments made of fir—harps, psalteries, timbrels, and many others.

The bay tree, a spreading tree of the laurel family whose characteristic growth is compared in Psalms to the spread of the wicked in temporary power. The leaves had culinary value and its roots and bark were used in medicine.

The algum or almug trees, brought in great quantities from Ophir for Solomon's Temple. The wood of these trees was also used in the construction of musical instruments. The wood is very hard, heavy and fine grained and of a beautiful garnet or reddish color, making it suitable for such instruments as harps, psalteries, etc. The sandalwood, a species of the algum, was also used for its sweet odors.

Due to the prominence of ceremonial rites, as well as in their family use, oils, spices, incense, gums and perfumes were of great value, all or the majority of which were made from the leaves, bark, wood or flowers of shrubs and trees. Among trees used for these purposes we find the Balsamodendron Myrrha, a small stunted tree with light gray bark from which Myrrh, was made. A drink of wine and myrrh was offered to Jesus on the cross and refused.

While the tree from which Frankincense is made is not specifically mentioned, Frankincense is mentioned so frequently that I might remark that it is a resin from a tree called Arbor Thuris.

The oil tree, mentioned in Nehemiah, is distinct from the olive tree, and is thought to be the Zackum tree of the Arabs, a small growing tree on the plain of Jordan. This oil is in high repute for its medicinal properties.

The almond an early symbol of old age, was used for culinary flavoring. Aloes, referred to in Psalms, a fragrant tree of the palm family, was used for perfume and incense and possibly for medicinal purposes.

Cassia, a source of Senna, was used for many purposes, drugs, flavoring, and especially a laxative.

Many trees are mentioned as decorative, among which are the myrtle, a type of evergreen tree, also sweet scented. In addition to being decorative, oil and wine were prepared from it's berries.

The pomegranite, referred to in the book of Kings as ornamental in the Temple, was also important as the spicing of wines and for its medicinal properties. It was also used in tanning of leather.

The box, an evergreen tree of hard wood is mentioned several times for decorative purposes.

Thyine, "Sweet" wood mentioned in Revelation, is a cone-bearing tree allied to the pine. It is prized for the beauty of its wood for various ornamental purposes. By the Romans, the tree was called Citrus. It is a native of Barbary, and grows to a height of approximately 25 feet.

The willow mentioned only a few times, had little commercial value due to the soft wood. It is mentioned as landmarkers and decorations.

Pines, often associated with the fir and box for landscape purposes, was also grown for the gum they produced which was used in waterproofing and sealing the spaces between planks in ships. It was also used in other construction.

We have trees which are mentioned with reference to certain occasions, as the sycamore—Zacchaeus, the tax-colector near Jericho, who being short in stature, climbed up into a sycamore tree in order to see Jesus as he passed by.

The chestnut Ezek. 31:8, describing the glories of Assyria—mentioned only once. It was used for food and fuel.

The juniper, Kings 19, Elijah was sleeping under this type of tree when the angel appeared and awakened him to arise and eat. The juniper grew in barren areas and was used extensively for fuel.

The elm, describing the infidelity of Israel, their false Gods and their punishment, Hosea 4:13, "The shadow thereof is good . . ." Many sacrifices were offered under elms, probably an offering for the innumerable sins supposedly committed thereunder.

The mulberry, 2 Samuel 5:23, used to signify the time to defeat the Philistines, by the rustling of its leaves as an omen to Daniel from the Lord.

Jacob used rods of Green Hazel, mentioned in Genesis.

Walnuts were common in Palestine and were in Solomon's garden. Used chiefly for food and dyes.

Lemon and lime, naturally used for flavoring and medicinal purposes.

Mandrake is a small tree with narcotic properties.

The liquidamber tree is possibly not the same tree as our southern sweet gum and there seems a contradiction as to its classification. It is thought to be the storax which is more like a shrub. Its aromatic resin was made into an ointment for some skin diseases, and used also for other medicinal purposes. Jehovah's sacred perfume included one of its ingredients. It also had narcotic properties.

The balm tree, resembling the fig, growing 12 to 15 feet high, abounded in Gilead, east of Jordan, hence "Balm of Gilead." It is fragrant and supposed to have healing as well as aromatic qualities.

The ebony and cypress were both used in graven images. The high quality of the wood makes it also valuable in carvings and in making musical instruments.

Since beginning with Genesis, we might well end our references from the Apocalypse, Rev. 22:2 . . . "On either side of the river, was there the tree of life, which bare twelve manner of fruits, and yielded her fruit every month: and the leaves of the tree were for the healing of the nations."

Individuals and events have played a prominent role in forming the historical chain of mankind that link all periods into a design, but the TREE unaided, as an over-all picture, has maintained its own historical links through the ages, some living as long as 2000 years and upward. Many others, as accredited to the sacred olive of the Acropolis, seem to reproduce themselves since some species of all trees mentioned throughout history are in existence today—few, if any, entirely disappearing.

Were it possible for man to subsist without trees, the bleakness of a world without them would be indescribable. The beauty of a world in which to live is as important as the necessities of life, and TREES have contributed generously to this beauty. Two of the least of examples might be—Did you ever stand under a dogwood tree in full bloom, and look up through its spreading branches at the array of white flowers against a deep blue sky? . . . Did you ever stand under a large spreading leafless oak tree on a gray cloudy day, and look up the spreading branches and the millions of tiny sprangling limbs against a gray background of clouds? . . . Priceless pictures which no artist has ever been able to reproduce.

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FPL Identifies Wood Species Used in Independence Hall

Tiny pieces of wood are being used at the U. S. Forest Products Laboratory at Madison, Wis., as clues in unraveling the architectural history of Philadelphia's famed Independence Hall where American independence was born 181 years ago.

Small specimens taken from the interior paneling and woodwork of the building have been sent to the Laboratory for analysis by Charles S. Grossman, resident architect of Independence Hall, who is studying the architecture of the building.

To date, B. Francis Kukachka, Laboratory wood identification expert, has examined 54 specimens under his microscope. Each of the samples, some smaller than matchsticks, arrived at the Laboratory in a separate envelope on which was noted the exact location in the hall from which it was taken.

Kukachka has identified all of the specimens examined so far as native American woods. These species, eastern white pine, Atlantic white-cedar, southern yellow pine, yellow-poplar, white oak, and spruce, were growing in the New World when the first colonists arrived.

The choice of species for various uses by the men who built Independence Hall suggests that the early colonists had a good working knowledge of the woods at hand. Each kind of wood was apparently used so as to take advantage of its best qualities.

For instance, eastern white pine and Atlantic white-cedar were used in the hall for hand-carved items, such as moldings and column capitals. Both of these species have long had a reputation of being easy to work with hand tools—the only kind the colonists had.

On the other hand, the strong, hard southern yellow pine, which is normally used for framing buildings, was employed extensively in the hall for load-carrying column shafts as well as wainscoting and boards.

The two hardwoods were also used to good advantage. The strong, heavy white oak was used as a supporting beam in the bell tower, while the yellow-poplar, a softer, lighter wood, was used for hand-carved items.

The main reason why the builders of Independence Hall used native American woods was not tradition but transportation. It just wasn't feasible for the builders to haul timber great distances in those days of forest trails when it was growing right in their own backyard.

"Because of the problems of transportation, the builders of the Hall used species that grew near Philadelphia," reported Kukachka. "All of the species identified so far no doubt grew within 25 miles of the city in the 1700's."

At the time the building was being constructed, no one suspected that it would become famous as the birthplace of American independence. The structure that was started in 1732 was to be the statehouse of the colony of Pennsylvania. For many years, the assembly, supreme court, and governor's council of that colony met there.

The building didn't become famous until one summer day in 1776 when a small band of colonists signed the Declaration of Independence there. In the same building, George Washington was named commander-in-chief of the Continental Army, and the Convention of 1787, which drafted the Constitution met there.

In one entrance hall of the building stands the Liberty Bell, which announced the news of the signing of the Declaration of Independence to the City of Brotherly Love. It was through the Liberty Bell, or rather the beam that supports it, that the U. S. Forest Products Laboratory first became involved in the studies on Independence Hall.

In 1953, the Laboratory was asked to send experts to Philadelphia to test the beam supporting the famous bell. The custodians of the bell wanted to know what species the beam was made of and whether it was capable of supporting the weight of the bell—2,080 pounds.

At that time, Kukachka and Alan Freas, a Laboratory engineer, examined the beam. Kukachka identified the wood as slippery elm, not walnut or oak as had been supposed. Freas calculated the strength of the beam on a slide-rule and concluded that it is capable of supporting the weight of five Liberty Bells for many generations to come.

During the past 45 years, scientists at the U. S. Forest Products Laboratory have established the average strength properties for virtually every native American species. Once the species, size, and condition of a piece of wood are known, it is relatively simple for an engineer to determine how much weight the wood can support.

If a species is identifiable by the wood alone, all Kukachka needs are very tiny particles of wood. Some woods can be identified from sawdust and even wood flour . Others, such as the oaks and pines, are so alike that only certain

(Continued on Page 26)

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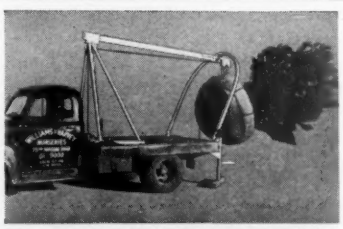

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Nasty Pest

Boxelder Bugs often are found entering homes during the fall months seeking shelter for the winter. These bugs can become a nuisance, even though they do not feed on household furnishings or buildings. It is advisable to destroy the bugs before they go into winter hibernation. When the mature bugs leave the trees, they may congregate around foundation walls and along fence rows. They can be destroyed by using dieldrin dust or spray on the surfaces over which the bugs crawl. After the bugs enter the house, they can be killed with household formulations of 0.5 per cent dieldrin dust or spray. Treatment indoors should be made around door sills, window frames, or wherever the pests may enter the house. Direct application to the insects is desirable when they are seen congregating. Cutting down of boxelder trees is not necessarily recommended, because the bugs often come from trees quite some distance away. The insect also feeds and develops on ash, maple, and many fruit trees and ornamentals.

Smoking Arkansas Tree Has Experts Baffled

LITTLE ROCK, Ark., April 18 (AP)—A Little Rock housewife didn't know what to think today when a mulberry tree in her backyard appeared to have smoke puffing out of its branches.

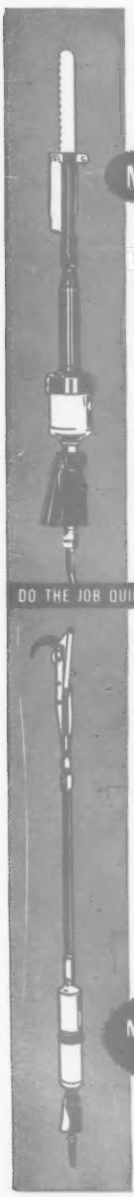
Fascinated, Mrs. Verdia Brown watched the phenomenon for a while and became convinced the tree was puffing smoke in little whisps like a person exhaling cigaret smoke.

"I don't know anything about horticulture and I didn't want anyone to think I'm crazy," she said, so she called the policeman as a witness.

Patrolman Gene Adcock said: "I'd call the newspaper. Somebody else ought to see this thing."

A breadman, a milkman, a reporter and a photographer all witnessed the "smoking" mulberry tree.

State Forester Fred Lang took a look. He was unable to say definitely what caused the smoke-like whisps emitted from the branches.



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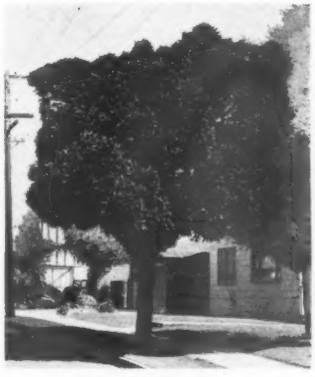
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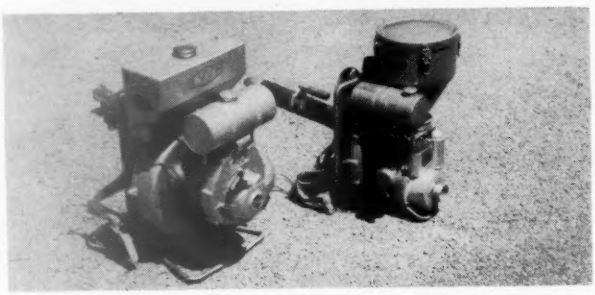

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Complete Plant Food

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Air Powered Pruning Tools

WEED SEEDS

The study of weed seeds can be fascinating, educational, and an inspiration for artistic designs—especially if you use a good magnifying glass or hand lens. People wonder why weeds are so aggressive; why they succeed where desirable plants fail; why they thrive in spite of drouths, grass fires, mowing and cultivation. One answer, in the case of most weeds, can be found in the seeds that they produce.

Some weed seeds have such a hard durable outer coat that they are unharmed by an ordinary grass fire. If eaten by a bird or a grazing animal, they are not digested in its stomach and are widely distributed. Some kinds have such vitality that they have been known to sprout and grow when brought to the surface after being buried deeply for many years. Many weed seeds have interesting appendages which cause them to be carried long distances by winds or which enable them to cling to passing animals.

The seeds of some weeds are enclosed in small "nutlets." Beggar-lice, nutlets of one of the Stickweeds, are covered with clusters of from 3 to 5 fine barbs resembling the claws on the foot of a housefly. On another kind the clusters are star-shaped like the end of a dentist's drill. A Puncture Vine nutlet has spines arranged so that, no matter how it lies, one will be pointing upward—exactly like the French caltrop and the Roman tribulus used to stop an enemy's cavalry. Similarly, a Sandbur will cause painful injury to a barefoot boy, the paws of dogs and cats, or even puncture a bicycle tire.

The Burdock and the Cocklebur produce quantities of burs with hooked spines arranged in ornate but very effective patterns. The coats of dogs or other animals, and the tails of horses and cows, frequently become matted with these pesky burs which, when they are pulled off, spill out large numbers of small seeds. The cocklebur is an example of plants that produce more than one type of seed: some of its burs germinate the following spring, others in two years, and so on.

There are weed seeds armed with slender pointed bristles, called "awns," that expand and contract according to the amount of moisture encountered. Thus, the Wild Oat seed has two awns which enable it to creep along the ground until it can enter some crevice. Porcupine or Needle Grass seed has two which twist like an auger and bore into the soil.

Some weed seeds have odd shapes which are responsible for the common name of the parent plants. Those of the Moonseed vine are crescent-shaped

(Continued on Page 18)

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PIONEER CHAIN SAW

right for every job!

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Lightweight Champ:
bars 16", 20", 24", 28", 32"

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deep-woods work leader:
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COSTS LESS BECAUSE IT LASTS LONGER!

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makers of *Johnson* and *Evinrude* outboard motors and **LAWN-BOY** power mowers.

"Some selected territories still available."

Research Produces Saw So New It's Called The "Rebel"

When a manufacturer wants to be sure of his product development, the only way to be absolutely sure is to put it in the hands of unbiased field testers. To find the answer and get additional ideas, Wright Saw has just completed one of the biggest in-use tests ever to be undertaken for a product prior to its introduction to the consumer. The result is the entirely new version of the popular Wright Power Saw. This new version of the gasoline-powered, reciprocating blade action saw has been given the name of "Wright Rebel."

"We wanted to take this saw which has had extremely wide acceptance and make it suitable for all areas, all climates, all conditions," explains Lou Turner, general sales manager for the Wright Saw Division, Thomas Industries, Inc., Louisville. "Now after years of research, improvement and

development we have the answer in the new Wright Rebel."

One of the biggest changes is in the front assembly. It has been completely redesigned to operate at top officiency even under sandy soil conditions. The governor assembly has been redesigned to provide smoother and more efficient operation. The front housing has been completely sealed to prevent entry of foreign matter into the engine.

The governor end of the crankshaft is chrome plated for longer wear. The new air filter assembly protects the filter from the elements and is designed to keep out sand and sawdust. The new magneto assembly has cooling fins cast into the flywheel giving more fin area, providing better cooling for the firing cylinder. The magneto also has larger diameter breaker points and is moisture resistant. The saw has an all position carburetor, making it possible to saw at any angle.

The saw which weighs less than 25 pounds, has long been a favorite with both experienced and inexperienced operators because of its many safety features and ease of handling. Some new items incorporated include the addition of a leg to the air shroud base for better stability and added clearance to make the governor pin more accessible for replacement. The new blade has been lengthened to 20 inches. Every improvement was made with both the operator and serviceman in mind.

The steps that led to these improvements and the exciting new saw are a dramatic chapter in the history of product development. More than a year ago, saws were shipped to a large test group in all parts of the United States and Canada with a heavy concentration of testers located in the South and Southeast. These testers — pulpwood cutters, farmers, arborists, orchard men, lumbermen, road builders—had agreed to put the saw into day-in, day-out use over a period of several months. They had also agreed to report back their comments and suggestions, both pro and con.

After months of field testing, these saws were returned to the research laboratories of Wright Saw. After extensive testing and examination many conclusions were reached, more changes made. The comments of the field users were carefully studied and suggestions investigated. From all of this has emerged the new Wright Rebel.

Weed Seeds

(Continued from Page 16)

like a new moon. The Spanish Needle has a long slender seed armed at the broader end with three prongs and each of these has a sharp curved hook. The Bootjacks or Beggar-ticks, with two such awns, resemble that old-time implement used on farms and ranches. Docks, Smartweeds and Sorrels have wedge-shaped seeds which help them to easily work into soil openings.

Some weeds such as Dandelion, Wild Lettuce and the Thistles, have tufts or "parasols" of fine hairs attached to their seeds, and these serve like parachutes which are carried long distances by winds. Those parachutes are interesting. The Seed of the Goatsbeard, now a roadside pest, has one with a lacy arrangement of silky threads which travels daily until it passes over a moist area. Then the parachute, called a "pappus," closes and the seed drops to the ground.

A race of plants depends upon its seeds — each one a masterpiece of arrangement and construction.

Roberts Mann, Nature Bulletin

Milford French

The many friends Mil French has made thruout the country will be saddened to learn of his passing on July 22.

Mil was City Forester at Richmond, Virginia; a post he had held with distinction for over 20 years. Many streets of fine trees will serve to keep his memory live with the citizens of Richmond.

We extend our sincerest sympathy to his family and his co-workers to whom he had always been a kindly and warm friend.

FOR SAFETY
spray with Pratt's

Pratt's Sprays are formulated for use in mist blowers or hydraulic sprayers to give the greatest degree of safety and effectiveness for shade trees and evergreens.

PRATT'S 25% DDT (petroleum solvent) has created an enviable reputation for safety to the trees, even under conditions of heavy application. Correctly balanced for long residual toxicity. This material will stand freezing weather.

PRATT'S X 25% DDT (xylene solvent) is manufactured to meet certain City or State specifications for Dutch elm disease spraying. Made according to U. S. D. A. formulations, with or without white oil.

SCALECIDE—The oldest and best known dormant oil spray. Contains 96% highly refined, highly paraffinic dewaxed oil. Use Scalecide for the control of scale, aphis, red mite, and over-wintering insects on shade trees, fruit trees, evergreens and ornamentals.

PRATT'S SUMMER SPRA-OIL—A miscible 97% white oil type summer oil. For use in the control of red spider, scale crawlers, white fly and as an effective ovicide, also used as a dormant spray for evergreens where a lighter oil is desired.

D-X INSECT SPRAY—One of the most effective non-poisonous sprays for sucking and chewing insects of shade trees as well fasruit trees. Contains rotenone, pyrethrum and piperonyl cyclonene for great effectiveness and safety.

Pratt is basic in Chlordane, Malathion, Lindane, etc.

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Prostrate Pfitzer Junipers, age 11 mos. Pfitzer at right was fed Heller-Gro at 3 mos. Both were grown by usual methods. Heller-Gro has produced results like these on all types of evergreens, including broad-leaved, as well as on deciduous trees.

Heller-Gro complete plant food produces sturdy root growth and luxuriant deep-green foliage—almost overnight! Lawns, trees, flowers and shrubs take on new beauty within a few days after you feed them Heller-Gro.

Heller-Gro is a balanced plant food—15-15-15 with trace elements. Two sources of nitrogen—fast-acting nitrates, and slow-release urea for long-term plant nutrition. All ingredients are USP laboratory grade. Supplied in economical paste form; dissolves completely in water for root or foliar feeding. Solution will not burn.

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Origin of Planes

(Continued from Page 9)

also be hybrids resembling more closely *P. orientalis*. He says that the leaves of the Oriental Plane vary bewilderingly. Actually some of the leaves of his Oriental Plane are very close to those of his London Plane given in the same illustration.

In the city of Philadelphia, no less than 158,000 trees are planted along the sidewalks.[2]. According to Mr. W. B. Satterthwaite, principal arboriculturist of the city, 50,000 are Plane-trees, and all except two, are London Planes. The two exceptions are probably Oriental Plane, growing along Verree Road in the Fox Chase section of the city. (Fig. 7). Another tree of its kind growing nearby as a street tree is in the town of Ardmore, Pennsylvania.[3].

[2] The street trees of Philadelphia are under the jurisdiction of the Fairmount Park Commission. I am indebted to Mr. Satterthwaite for information on the Plane-trees in Philadelphia.

[3] Mr. Satterthwaite says that he obtained some cuttings from this tree ten years ago and was able to propagate several trees. One is quite large now and is growing at the west end of site of Horticultural Hall. Cuttings from the other two trees had not proved successful.

A resident along Verree Road informs us that the Plane-trees there were planted some twenty-five years ago from seedlings obtained from the nearby Krewson's Nursery. The two supposedly Oriental Plane-trees are somewhat distinct from the numerous other London Planes, being much more slender and more sparsely branched. The outer barks are nearly completely peeled off exposing the smooth silvery grayish inner bark. There are three to five fruiting heads to the cluster. The leaves are deeply 5-7-lobed, with the sinuses reaching below the middle of the leaves. As the trees are trimmed every year we are not aware of any frost-killing of the younger branches.

In addition to the three trees on the records of Fairmount Park, we have discovered a fourth tree, on Paper Mill Road just beyond the city limits near Chestnut Hill. This has the same kind of deeply and narrowly lobed leaves and smooth whitish bark. (Fig. 8). It is a larger tree than those on Verree Road, with the trunk approaching the size of the other London Plane-trees lining the street along with it. These trees are about the same size and age as those on Verree Road and were probably all planted about the same time. The tree along Paper Mill Road, however, bears fruits mostly in clusters of twos.

These four Philadelphia trees of supposedly Oriental Plane identity, like the trees of New York mentioned above, may not be pure *P. orientalis*, but hybrids of *P. orientalis* and *P. occidentalis*. However, instead of showing intermediate characters between the two parent species like most other London Planes, they resemble more closely the former parent. Our supposition is prompted in part by the fact that although the leaves of these trees approach very closely *P. orientalis*, the smooth whitish bark seems to resemble more *P. occidentalis* than it does the former. Without actual records of the origin of these trees, it is not possible to ascertain their true identity, and since these trees approach so closely the features of *P. orientalis*, even though they may be of hybrid origin, they may pass as that species for practical purposes in identification. These plants appear to be especially close to *P. orientalis* var. *cuneata*, which is considered by Henry (1919) as a variety of *P.* × *acerifolia*. See further discussions under the London Plane.)

In recent years there have been several efforts made in this country to introduce authentic stocks of *P. orientalis* from Europe and the Orient. The Morris Arboretum received in 1954 seed from

(Continued on Page 24)

Position Wanted as Park Supt. or City Arborist

Lifetime experience and College trained in - Horticulture, Landscape - 2 years as city forester

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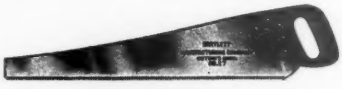

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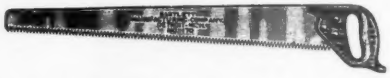

NO. 170 FORESTER'S. Extra-large peg teeth, 4½ points per inch with an unusually stiff blade, 26 inches long. Ideal saw for heavy cutting.

NO. 114 RAPID CUT. Similar to 114B except that every third tooth is a well formed raker. Especially deep gullets provide for quick clearance. 26-inch blade. Also available with 24-inch blade, No. 124.

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Top Production. Rugged 6 horsepower engine with gear drive gives you the lugging power to bring down the largest, toughest trees faster and easier. Built for hard, everyday use, the 6-22 is a real production cutter's tool.

More Profitable Cutting. This smooth-operating Homelite brings down time *down.* You get longer engine life, spend less time out-of-the-woods for maintenance and repairs . . . less time refueling the big new gas tank. You cut more efficiently for more profitable cutting.

Money-Saving Attachments. The Homelite 6-22 is the newest one man chain saw that has plunge-cut bow, brush cutter, and clearing attachments available. You can make a quick switch and be ready in seconds for any type of cutting.

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1. 97% pure, organic sedge reed, bacterially high content.
2. One cubic foot makes upward to 50 cu. ft. of good soil, or 15 cubic feet of rich organic soil.
3. Excellent natural nitrogen—readiness to use—going to work at once.
4. Delightful flowing into the soil in handling—uniform structure creates maximum economy.
5. Normal moisture holding, with gradual delivery only to soil and plants assure the maximum in plant development.
6. A product processed, based on 30 years proven continuous operation, has a ph of 4.5 to 5.5, that is quickly, easily and economically adjusted to needs of any plant material.
7. The most efficient and economical soil building nature product in existence.

"Green-Up America With Green Thumb Peat"

PRICES ON TRUCK OR CAR LOADS ON REQUEST

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Crane for Treemen

A 2,000 lb. capacity hydraulic truck crane that permits loading and unloading from any point on a truck bed is being offered by Jeffrey Crane Co. of Hamilton, Ohio.

The Jeffrey Crane mounts on any truck, tractor, dock or floor. The Crane rotates in a full 360 degree circle in its well. It can be locked in any of several positions. The well mounts on top of truck bed and is braced to the chassis from below. The mask rotates in a well bearing sleeve. Hydraulic power is supplied by a choice of P. T. O. driven or electric pump. Remote controls for the hydraulic system permits the operator to assist in loading and yet be as much as 20 feet away.

An exclusive feature is the "Self Loading" boom. The 9′ boom is

equipped with a rolling trolley. This permits a load of 2,000 lbs. to be rolled to any position on the truck when the boom is in horizontal position.

The Jeffrey Crane is particularly useful for those engaged in service work such as transporting and delivering trees, engines, construction tools and equipment between jobs, field service for oil, gas and water producing equipment and public utilities.

For details on the Jeffrey Truck Crane, address requests to their National Sales Representatives, Collins and Associates, 4902 Heuwerth Avenue, Cincinnati 38, Ohio.

For Your Calendar

National Shade Tree Conference, 33rd Convention, Sheraton Hotel, Philadelphia, Pa., August 26 - 30th, 1957.

Connecticut Arborist's Short Course, University of Connecticut, Storrs, October 3, 1957.

Sixteenth Annual Short Course on Roadside Development, Columbus, Ohio, October 8-11th, 1957.

N. J. Federation of Shade Tree Commissions, 32nd Convention, Hotel Haddon Hall, Atlantic City, N. J., November 17-19, 1957.

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Pennsalt Chemicals

NAA NEWS

By PAUL E. TILFORD, *Secretary*
Box 426, Wooster, Ohio

HOW MANY STREET TREES?

Suppose that you were on the $64,000 Question program and were asked "How many street trees are there in the United States?" You wouldn't know the answer but surely you would make a guess. It would be interesting to know what answer you would give.

Probably none of us will ever get this question on a quiz program but it was presented recently to the National Arborist Association by a Market Analyst. At first it seemed impossible to give even a crude estimate. It was an interesting question and after receiving help, for which we are very thankful, from 50-some good friends, the U. S. Census Bureau, and then doing some figuring, we came up with a guess—32¼ million. You may think this figure is way off, and it may be, but we arrived at it in the following manner.

Many cities have accurate counts of the trees on their streets and in some other cities the municipal forester or park superintendent can give an estimate that is fairly accurate. We wrote to 75 shade tree officials representing cities of various sizes and distributed across the nation. We asked them for the count or estimate of the number of street trees and the population of their city. Forty-seven replies were received with information that could be used. The replies were grouped according to the size of the city. The average number of people for each street tree was calculated for cities in each size classification. These averages are given in the following table.

Number of People per Street Tree in Cities of Different Size

No. of Replies	*Size of City*	*Avg. No. People per Street Tree*
5	Less than 25,000	1.6
5	25,000 to 50,000	2.0
15	50,000 to 100,000	2.6
7	100,000 to 250,000	4.2
6	250,000 to 500,000	5.4
6	500,000 to 1,000,000	3.4
3	1,000,000 and over	10.0

The averages all fall on a fairly straight line when the number of people per street tree and size of city are plotted on a graph, excepting the 3.4 people per tree for cities of 500,000 to 1,000,000. This average should be twice as large as it is, to be in line with the others. We have no explanation for this apparently low figure but we have used it rather than try to correct it.

The three cities from which we received reports with the most street trees per unit of population were Whittier, California, and Greenwich, Connecticut, each with 0.7 people for each street tree and Santa Ana, California, with 1 person for each tree. Brooklyn, New York, reported the fewest trees on a population basis — 20 people for each tree.

The Census Bureau reports for 1950 gives the population figures for cities of various sizes, incorporated urbanized areas of different sizes, unincorporated urbanized areas of different sizes, unincorporated urbanized areas and rural areas. When we divide the population of a city or area by the number of people per street tree for cities of that size we get the number of street trees for that city or area.

In making the calculations we did not include rural areas or unincorporated urban areas with no indivdual size classification. Certainly any definition of street trees would exclude trees of such areas. Trees growing along roads would be considered roadside trees and not street trees. Cities and all incorporated or unincorporated urbanized areas of definite size are included. It would seem that all such areas would have street trees rather than roadside trees.

It must be understood that no claim is made for the accuracy of the 32¼ million figure. We do believe that it is a reasonable guess as to the number of street trees. It is based on the 1950 census and probably is on the conservative side. But considering the U. S. as a whole, what's a million street trees more or less? The number always will be changing constantly.

Number of Street Trees in the United States

Alabama	551,430	Maine	265,920
Arizona	180,030	Maryland	454,850
Arkansas	329,850	Mass.	1,269,980
Calif.	1,620,060	Michigan	1,324,060
Colorado	290,690	Minnesota	647,740
Conn.	335,720	Mississippi	330,640
Delaware	51,380	Missouri	908,210
Florida	716,190	Montana	148,860
Georgia	611,580	Nebraska	297,740
Idaho	150,260	Nevada	53,210
Illinois	1,746,940	N. H.	162,650
Indiana	907,710	N. J.	1,601,680
Iowa	597,990	New Mexico	183,640
Kansas	482,150	New York	2,825,540
Kentucky	593,640	N. C.	676,740
Louisiana	563,750	N. Dak.	94,850
Ohio	2,171,640	Utah	206,010
Oklahoma	515,620	Vermont	100,630
Oregon	292,580	Virginia	547,820
Penn.	2,539,980	Washington	593,560
R. I.	201,100	W. Va.	353,700
S. Dak.	119,250	Wisconsin	875,870
S. C.	392,810	Wyoming	86,370
Tennessee	474,230		
Texas	1,778,040	Total	32,224,980

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Origin of Planes

(Continued from Page 20)

three sources, from Kashmir through Mrs. Laura Barnes from Turkey through Dr. Frank Meyer, and from Italy through Dr. Benjamin Blackburn. A number of seedlings were raised but all perished either in the greenhouse or when outplanted except one in the nursery which is now about two feet high. This tree is from seed obtained from Italy. (Fig. 3).

THE AMERICAN PLANE

In eastern North America, *Platanus occidentalis* occupies a very wide range from Maine to Ontario westward to Minnesota and southward to Florida and Texas. Within the region it is a common tree, inhabiting especially the borders of streams and lakes and rich bottom-lands. A variety *glabrata* with smaller, more deeply lobed leaves, but considered as indistinct by some botanists, occurs in central Iowa and Missouri to western Texas and northern Mexico.

The American Plane, attaining to a height of 140-170 feet is, according to Sargent (1895), the most massive if not the tallest deciduous-leaved tree of the North American forest. It is a taller tree than the Oriental Plane and, like the latter, it lives to a great age.

The American Plane can be distinguished from the Oriental Plane by the bark, the leaves, and the fruiting heads. The bark peels off in small thin scales, exposing the large irregular surfaces of almost creamy white instead of flaking in large pieces revealing a dull grayish or greenish white beneath as does the Oriental Plane. The leaves of the American Plane are 3- or sometimes 5-lobed with broad-triangular lobes which

are broader than long; while in the Oriental Plane, the leaves are deeply 5-7-lobed, the lobes being narrow, longer than broad, with the sinuses reaching to below the middle of the leaves. (Figs. 2, 3 and 4). In the American Plane, there is generally a single fruiting head borne on a stalk, rarely two together, while in the Oriental Plane, there are 2-7 fruiting heads together. In the American Plane, the old stigmas of the individual achenes are much shorter and consequently the head is much smoother and not as bristly. The achene has a flat or slightly rounded apex while in the Oriental Plane achene is not only more bristly but always more or less conical or tapering.

The American Plane, known also as Buttonwood or Sycamore, has been planted since the 16th century as an avenue tree or shade tree. It was introduced into English gardens by the younger Tradescant early in the 17th century (Loudon 1848). In England and on the European continent, it is not suited to the climate. Elwes & Henry stated in 1908 that so far as they know there was not a single tree of this species of any size growing in Britain. And the tree was equally rare on the continent; only a few trees were then known to exist in France and none in Germany or Austria. Henry also stated that although seedlings were frequently raised at Kew, they never lived more than a few years and suffered severely from frosts and diseases.

The Plane trees are especially desirable as street tree because of their ability to withstand smoke and the absence of insect pests, but the American Plane is now little used even in America because it is often severely subject to a blight, also known as anthracnose, caused by a fungus *Gnomonia venera.* The Oriental Plane appears to be practically immune from the attack of this fungus. The London Plane, the history of which we will presently investigate, is almost invariably affected, but to a much lesser degree than the American Plane.

In the horticultural literature of England and Europe, the American Plane, often known as Occidental Plane, is frequently confused with the London *Plane, P* × *acerifolia.* As pointed out by Elwes and Henry (1908) the confusion between these two plants seems to have begun early and persisted tenaciously. In the opinion of these authors, it is probable that most of the references to the "Occidental Plane" in Great Britain and on the continent of Europe actually refer to *P.* × *acerifolia.*

(To be continued)

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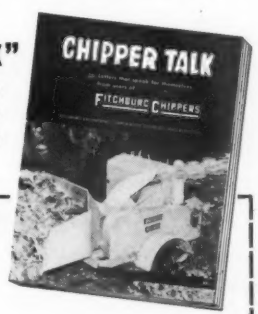

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(Continued from Page 6)

8:15 P.M.—"The Use of Plants in the Garden" — Owen Schmidt, Penn Valley, Narberth, Pa.

Wednesday, August 28

9:00 A.M.—"Antibiotics for Tree Disease Control"—Dr. John Dunegan, U. S. Dept. Agr., Beltsville, Maryland

"Sytemic Insecticides: Their Nature and Use in Arboriculture"—Dr. C. C. Hamilton, N. J. Agr. Exp. Sta., New Brunswick, N. J.

P.M.—Commercial Equipment Demonstrations

Safety Demonstrations

Visits and Sports

Thursday, August 29

9:30 A.M.—"Public Utility Arboriculture Session" — Keith L. Davey, San Francisco, Calif., Moderator

"What's New in Chemical Brush Control"—Dr. W. C. Bramble, School of Forestry, Pennsylvania State College

"Public Relations and Line Clearing" —John W. Anderson, General Supt., Philadelphia Electric Co., Philadelphia, Pa.

"Tools and Equipment" — Carl H. Asplundh, Asplundh Tree Expert Co., Jenkintown, Pa.

1:30 P.M.—Business Session

3:00 P.M.—"Genetics and the Production of Improved Shade Trees"—Dr. Jonathan Wright and Dr. Ernst J. Schreiner, Northeastern Forest Exp. Sta., U.S.D.A., Upper Darby, Pa.

"Mycorrhizae in Relation to Tree Growth"—Dr. Edward Hacskaylo, Agricultural Research Service, U.S.D.A., Beltsville, Md.

"Verticillium Wilt: Its Nature and Control" — Dr. Leon Dochinger, Central States Forest Experiment Sta., U.S.D.A., Columbus, Ohio

8:00 P.M.—Annual Banquet

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Friday, August 30

9:30 A.M.—Trip to the World Famous Longwood Gardens

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(Continued from Page 12)

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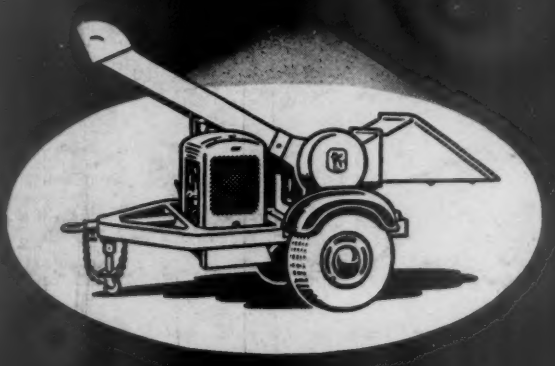

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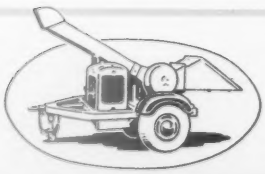

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